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Case and Index in GB Theory:

A Non-Configurational Analysis of Indonesian and Tagalog*

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1 Introduction

The past thirty years have seen revolutionary advances in Chomsky's theory of grammar. Although his theory has undergone a number of drastic and important modifications, there is at least one thing which has remained unchanged since the outset of this research: he has always pursued the nature of language through the analysis of English, his mother tongue. Almost all the claims he has made so far are based on his knowledge of English.

A legitimate question to be raised at this point is whether his claims can be applicable to other languages without causing any serious problems. Many linguists are now engaged in the analysis of other languages in the framework of Government and Binding (henceforth GB) theory, and they present a lot of stimulating problems for Universal Grammar.

In this article, we will concentrate on presenting a non-configurational analysis of Indonesian and Tagalog, languages of the Malay-Polynesian family. In general, Indonesian is not treated as a non-configurational language, for its word order is quite similar to that of English. But we will show in the body of this paper that at least it shares some properties of non-configurationality with Tagalog. Tagalog, on the other hand, is a plausible candidate for a non-configurational language, for we often find an inversion between subject and object without causing a considerable effect on meaning.

Now in non-configurational analysis, subject is not

distinguished from object in terms of structure. But this causes a rather troublesome situation for GB theory, for it postulates that every grammatical relation is determined in terms of structural position.

Facing this problem, current theory claims that every language has a VP (i.e. a constituent consisted of a verb and its object) at least at some level and that so-called non-configurational languages must have a dual representation. The dual representation consists of two sorts of structures: one is lexical structure which contains VP nodes and thus looks just like English. The other is the constituent structure which represents the flat structure of the language.

But this solution does not appeal so much to those who wish to do a realistic analysis of a language. If some other devices were to take the place of "structural definition of grammatical relation", we would get rid of that notorious dual representation. We will attribute this task to Case theory in this paper.

Before entering the main issue, we must mention what sort of linguistic works there have been in this area. Most of the works on Indonesian and Tagalog are limited to historical and comparative studies and description from the structural point of view. Although they include a lot of insightful investigation, there still remains a vast domain to be explained from the viewpoint of generative grammar.

Contributions from generative grammar are still small in number. Butar-Butar(1976) and Constantino(1965) formulate a number of transformational rules in the framework of Standard Theory. Chung(1976a,b) investigates the status of subject and object in Indonesian in the framework of Relational Grammar and

offers many inspiring observations.

Recently she has made attempts to explain Chamorro grammar in terms of GB theory. Chamorro is one of the languages which is historically related to Tagalog and Indonesian, and it also has several properties of a non-configurational language. She is now following the idea of dual representation, but she also wishes to replace it with some more plausible idea.

This paper consists of following chapters. Chapter 2 shows the definition of the terms we use here. Chapter 3 proposes the alternative way of Case assignment in non-configurational analysis. In chapter 4 and chapter 5, some apparently problematic constructions are presented and an effort will be made to explain them in terms of Case assignment and chain.

2 Definition of terms

2.1 X-bar theory

In this section, I will briefly state the overview of X-bar theory in current GB framework. The analysis in following chapters needs no modification in this module.

X-bar theory states that every category has basically the same structure. What was earlier called a phrase is now called a projection of a head. It is still controversial how many projections we should set, but Chomsky insists that two projections are necessary and enough. Since we find no reason to postulate a different number of projections in our analysis, we take this position here.

The first projection of head X is X', and the second projection is X". X" is often referred to as XP, and it is also customary to call it the maximal projection of X. The head

itself is sometimes referred to as minimal projection. Positions of maximal projections which constitute X' with the head X are called complement, and those which constitute X" with X' are called specifier.

X-bar theory itself does not determine the linear order among head, complement and specifier. It is fixed by the value of X-bar parameter for each particular language. The value of X-bar parameter in Indonesian and Tagalog happens to be the same as that in English¹:

- (1) X" → Y" X' (Y" = specifier)
- X' → X Y" (Y" = complement)

2.2 Categories

Chomsky has claimed that there are four lexical categories, i.e. noun, adjective, verb, and preposition. It is supposed that this is the natural consequence if we admit there are two basic features which determine the category: [±N] and [±V]. We cannot, however, find so many categories in Indonesian. The distinction between two categories is sufficient for this language.

- (2) i. noun, which needs a Case and a thematic role
- ii. verb (including adjective); what sort of complement it takes is specified in the Lexicon

We refer to the two categories in (2) as N and V, respectively, in this paper.

We can formally distinguish two subgroups in V's, the one which permits verbal affixation and the one which does not. But this classification does not always agree with the semantic distinction between verb and adjective, and furthermore they do not show any difference in syntactic behaviour. Therefore, it

seems reasonable to treat them as a single category.

Indonesian also has some particles which may correspond to prepositions in English, but we do not regard them as lexical items here. Instead, we take those particles as occupying the specifier of NP. This is a rather eccentric analysis for a "preposition" but it has at least one advantage. It draws near NP's and PP's together. It is traditional in English to treat NP's and PP's separately, but they share common properties from the viewpoint of verb. For both NP's and PP's can be an argument of a verb, and both can be a non-argument. For the example of NP as a non-argument, consider yesterday or next year.

We take a similar analysis in the case of Tagalog. Again, adjective is not regarded to be an independent category, hence a mere subgroup under V. Unlike Indonesian, however, Tagalog has no particles corresponding to prepositions in English. Instead, it has three suits of articles which mark the case of NP. We postulate here that these articles are in the position of a specifier of N" in Tagalog.

GB theory distinguishes lexical categories such as N or V from nonlexical categories such as INFlection or COMplementizer. In recent works, Sentence is regarded as a maximal projection of INFL, and S' as maximal projection of COMP. We do not have, however, any agreements or grammatical tense morpheme both in Indonesian and Tagalog. Furthermore, since we consider those languages as non-configurational language, there is no compelling reason for setting up the category INFL. Consequently, we recognize V" to serve as an S in this paper.

2.3 Definition of Government

Government is one of the most important concepts in GB theory;

roughly speaking, the head governs its complements and specifiers. The definition by Chomsky(1986b) is as follows:

- (3) X governs Y iff X m-commands Y and there is no Z, Z a barrier for Y, such that Z excludes X.

(Chomsky 1986b:8)

M-command is a revised concept of c-command, with the following underlined additional restriction.

- (4) X m-commands Y iff X does not dominate Y and every Z that dominates X dominates Y, Z a maximal projection.

(Chomsky 1986b:9)

Barrier is a recently introduced concept, which serves to express the common property of government and bounding. Every maximal projection which is not assigned a theta-role is a candidate for a barrier. Chomsky(1986b) puts some restrictions to I" and C", which are totally irrelevant here and too complicated to explain in a reasonable amount of space.

3 Case Assignment

Case was not a crucial concept in generative grammar before the appearance of GB theory. Although it is not general in English that case is morphologically realized, it is supposed in GB theory that every NP should be assigned an (abstract) Case. The following Case filter formalizes this idea.

- (5) Every phonetically realized NP must be assigned (abstract) Case.

Chomsky distinguishes a structural Case from an inherent

case. The inherent case is generally an oblique case and is assigned at D-structure by a preposition. The structural Case is either nominative or objective, and it is assigned to a position at S-structure².

Case theory, which is one of the modules of GB theory, stipulates the rule of Case assignment and restricts the distribution of Case. The main role it plays in GB theory is to restrict the position where NP can occur at S-structure.

More informally, this may be said to be the module which deals with grammatical relations. Needless to say, Chomsky does not regard a grammatical relation as a primitive concept. Although it is general to define a grammatical relation in terms of structure, we can also define it in terms of Case assignment. Subject is the NP which is assigned a Case by INFL, and object is the NP which is assigned a Case by V. The latter definition does not affect so much the current analysis of English. But it does affect the analysis of a language where a subject or an object cannot be determined in terms of its linear order. As we are now trying to analyse such a language, it is tempting to take the latter definition.

3.1 Assignment to a position

Let us outline here the rule of Case assignment which was proposed in Chomsky(1981).

(6) The NP governed by AGR is assigned nominative Case.

(7) The NP governed by transitive verb is assigned
objective Case.

(Chomsky 1981:170)

AGR stands for agreement of a verb with the number or person of the subject and this is supposed to be dominated by INFL in

English. Thus the nominative Case is always assigned to the position of the specifier of I", because it is the only position for an NP to be governed by AGR.

The objective Case is also assigned to a particular position. It is clear from the fact that the sentence which has a P" intervening between the verb and an objective N" is ungrammatical.

(8) *I put on the desk a pencil.

This is explained by the following adjacency condition.

(9) The NP which is assigned Case must be adjacent to its governor.

As is shown above, the current Case theory entirely depends on the positional relationship such as government and adjacency, and that Case is assumed to be assigned to a position, not to an NP itself.

3.2 Problems

Although the Case assignment rules (6)-(7) work very neatly in English, they cause some problems when applied to Indonesian and Tagalog. We will show below what is the troublesome point of them.

First let us consider the case of Indonesian. Since the unmarked word order in Indonesian is SVO, it appears to be a configurational language like English. In fact, we can identify a subject in terms of its surface position in most of the cases³.

(10a) [Wanita itu [mem-baca [buku ini]]].

woman the AV-read book this

'The woman read this book.'

(11a) [Buku ini [di-baca [oleh wanita itu]]].

book this TV-read by woman the

'This book was read by the woman.'

The prefix meN- denotes that the verb it attaches is in the active voice and the prefix di- denotes that it is in the passive voice. Since Indonesian verbs do not conjugate according to the person or number of subject, it does not seem reasonable to set up any nodes like AGR. Furthermore, since Indonesian does not have any grammatical devices to indicate tense, there is even no apparent reason for admitting the category INFL. So even if we regard the voice-markers as dominated by AGR, we have to consider it to be in V, not in INFL.

Now let us apply Case assignment rules (6)-(7) to the above examples. As for (10a), wanita itu is assigned nominative Case and buku ini objective. As for (11a), buku ini is assigned nominative and oleh wanita itu already has an inherent Case from the particle oleh.

But what if we apply them to (11b), which has the same meaning as (11a)?

(11b) [Di-baca [buku ini] [oleh wanita itu]].

TV-read book this by woman the

'This book was read by the woman.'

The Case assignment rule of (7) would predict that objective Case is assigned to buku ini in (11b). But, since (11a) and (11b) intuitively carry the same meaning, buku ini in both sentences have to be assigned the same Case, i.e. nominative Case. Although this may be a counterexample for the current Case assignment rules, this alone does not seem sufficient to claim

that Chomsky's Case theory is inadequate. For, his theory still correctly predicts that (11b) is grammatical, because it is not excluded by the Case filter.

To clarify the unmistakable inadequacy in Chomsky's theory, it may be helpful to consider the counterpart of (10a) which is produced by the same "transformation" as applied to (11b):

(10b)*[Mem-baca [buku ini] [oleh wanita itu]].

AV-read book this by woman the

'The woman read this book.'

(10b) and (11b) are perfectly the same in the structure and both do not violate the Case filter. So it is impossible to explain the difference in grammaticality between them by the theory envisaged by Chomsky.

Now let us turn to Tagalog. Tagalog is one of verb-initial languages and the word order among arguments is relatively free. Subject is distinguished from other arguments in terms of a case-marker. There are three sets of case-markers in Tagalog and every argument NP should be preceded by one of these. They are called ANG-case-marker, SA-case-marker, and NG-case-marker, respectively. ANG-case-marker works like a nominative. SA-case-marker is often used to refer to place, time and recipient. And NG-case-marker takes all the others, that is, objective, genitive and the agent in passive voice. (Throughout, articles and pronouns in Tagalog are glossed with its case name in capital letters.)

Following are Tagalog sentences which correspond Indonesian sentences (10)-(11).

(12a) [B-um-asa [ng aklat] [ang babae]].

AV-read NG book ANG woman

'The woman read the book.'

(12b) [B-um-asa [ang babae] [ng aklat]].

AV-read ANG woman NG book

'The woman read the book.'

(13a) [B-in-asa [ng babae] [ang aklat]].

TV-read NG woman ANG book

'The book was read by the woman.'

(13b) [B-in-asa [ang aklat] [ng babae]].

TV-read ANG book NG woman

'The book was read by the woman.'

The root of this verb is basa. The infix -um- is added to it in (12) to make it in active voice, and in (13) the infix -in- is added to make it in passive voice. But it would be rather accurate to call it "theme voice" to distinguish it from other "passive voices", because there are various voices in Tagalog.

When we consider the way of Case assignment in (12)-(13), we soon notice that the adjacency condition will never be satisfied. Since the position of ANG-phrase is not fixed, we cannot posit any AGR which is adjacent to all of it. So we must formulate the Case assignment rule without adjacent condition in Tagalog.

But what would it be? This is a problem of significance for Universal Grammar. Current theory solely depends on government and adjacency in Case assignment. But the existence of a language which does not utilize the adjacency condition compels us to seek another point of view for Case assignment. And if another device is necessary, it must be stated in Universal Grammar.

3.3 Case Assignment in terms of Index

Index is often used to distinguish what noun phrases refer to. Generally, each referential NP has its own index, whereas an anaphor has the same index with its antecedent. Thus, a pronoun may be coindexed with one of other referential NP's, if it is coreferential with it. And trace is always coindexed with its antecedent -- the moved element. Since the moved element and its traces together make a chain, index is sometimes used to mark a existence of a chain.

Here we propose to extend the range of index up to relations of verb and its subject. Since the verb form varies according to its voice and voice varies according to the selection of subject, we can think that the choice of verb form basically depends on its subject. Let us express this dependence in index: a verb succeeds the index of its subject. This may be formulated as follows:

- (14) Every verb is coindexed with one of its complements at D-structure.

We can further formulate a Case assignment rule utilizing this index as follows:

- (15) A verb assigns a nominative Case to the NP with the same index.

If there is left any NP which does not have any inherent case, the verb assigns it an objective Case. In both case, the assignee must be governed by the assigner.

In the current GB theory, it is assumed that the D-structure of active sentence is different from that of the passive. But now we get rid of those two distinct D-structures. Since we put

an index on verb to mark which NP is the subject, the different value of verb index produces the same effect. And this verb index will be realized as a verbal affix in Indonesian and Tagalog.

Now we can assign correct Cases by rule (15). Let us confirm it with examples cited above, repeated here.

(11a) [Buku ini_i [di-baca_i [oleh wanita itu]]].

book this TV-read by woman the

'This book was read by the woman.'

(11b) [Di-baca_i [buku ini]_i [oleh wanita itu]].

TV-read book this by woman the

'This book was read by the woman.'

If a verb assigns Case by its value of index, we can explain "the free order phenomena" in Indonesian.

Note that adjacency condition is required in Indonesian, while it is not in Tagalog. We cite below the relevant examples.

(11c)*[Di-baca_i [oleh wanita itu] [buku ini]_i].

TV-read by woman the book this

'This book was read by the woman.'

(12a) [B-um-asa_i [ng aklat] [ang babae]_i].

AV-read NG book ANG woman

'The woman read the book.'

This fact make us set up a parameter for adjacency condition, which is a desirable way for extending the range of languages we can explain.

To clarify the Case theory we are giving now, we must discuss a little more about (10b).

(10b)*[Mem-baca_i [buku ini] [oleh wanita itu]_i].

AV-read book this by woman the

'The woman read this book.'

Since this is an Indonesian sentence, we can appeal to the adjacency condition to exclude this. As can be seen, the NP oleh wanita itu is not adjacent to the verb with the same index.

To make it a grammatical sentence, that NP must be governed by the adjacent verb. The positions which satisfy these conditions are the complement and the specifier position of VP. Of these two, we cannot move anything to the complement position, since it is already filled (or more technically, since it is a theta-position). So the only way out for (10a) is to move the co-indexed NP into the position of specifier of VP. But, unexpectedly, the outcome is still ungrammatical:

(10c)*[Oleh wanita itu_i [mem-baca_i [buku ini]]].

by woman the AV-read book this

'The woman read this book.'

Instead, if we delete oleh, then we get a grammatical sentence.

(10a) [Wanita itu_i [mem-baca_i [buku ini]]].

woman the AV-read book this

'The woman read this book.'

When we compare (10c) and (10a), we see that the problem is the existence of the particle oleh. We can explain it if we assume the filter which forbid the duplication of Case. Since it is generally conceived that a particle assigns an oblique case, the ungrammaticality of (10c) can be attributed to the fact that oleh wanita itu is assigned nominative Case in addition to the oblique case assigned by oleh. The duplication of Case is often

mentioned but has not yet clearly formulated. We can incorporate it in the Case filter, if we revise it as follows:

- (16) Every phonetically realized NP must be assigned one and only one Case.

According to the Case assignment rule (15), objective Case is not assigned to that which has any inherent case, but nominative Case is assigned to any NP which has the same index with V. Then, if the target NP is accompanied by some inherent case assigner, that sentence will be excluded.

The only possible way out is to delete that particle. But when we proceed the investigation, we will soon notice that there exist undeletable particles as well as deletable ones. It is plausible that the deletable ones are specified in each Lexicon.

In case of Indonesian, it turns out that oleh is the only one particle that is deletable. There are several other particles in Indonesian such as ke 'to' and dari 'from', but we cannot have a sentence in which NP marked with ke or dari is coindexed with the verb.

- (17a) [Ali_i [pergi_i [ke Jakarta]]].

Ali go to Jakarta

'Ali went to Jakarta.'

- (17b)*[Ke Jakarta_i [di-pergi_i [oleh Ali]]].

to Jakarta TV- go by Ali

- (17c)*[Jakarta_i [di-pergi_i [oleh Ali]]].

Jakarta TV- go by Ali

It is interesting to note the fact that oleh can be deleted even if it does not cause the Case duplication:

(18a) [Anjing itu_i [di-pukul_i [oleh anak-anak]]].

dog the TV- beat by children

'The dog is beaten by children.'

(18b) [Anjing itu_i [di-pukul_i [anak-anak]]].

dog the TV-beat children

This is the convincing evidence for setting up the rule of oleh deletion.

In case of Tagalog, there is only one kind of inherent case assigner, and that is SA-case-marker. When we consider the following examples, we must conclude that it is deletable.

(19a) [Nag-bigay_i [ng premyo] [sa istudyante] [ang titser]_i].

AV-give NG prize SA student ANG teacher

'The teacher gave the prize to the student.'

(19b) [B-in-igy-an_i [ng titser] [ng premyo] [ang istudyante]_i].

give -LV NG teacher NG prize ANG student

'The student was given the prize by the teacher.'

(19a) shows that sa istudyante has an oblique case assigned by sa, whereas in (19b) the nominative Case marker ang replaces its former marker sa. We can attribute this phenomenon to the deletability of SA-case-marker.

In this chapter, we showed first that adjacency condition does not work well in case of Indonesian and Tagalog. So we proposed that the Case would be assigned by referring to the verb index. The process of indexing itself is arbitrary, but as a result the NP which is coindexed with a verb would be regarded as a subject of that clause. Thus the indexing makes it possible to distinguish subject from other arguments in non-configurational structure. We discussed then the duplication of Case and the

deletability of a particle. It is very useful to postulate that Case should not be assigned more than once, and if we incorporate that idea into Case filter, it makes the grammar more restrictive. But when we take this revised Case filter, we must admit that some inherent case assigner may be deletable. We showed at the same time that this deletion rule has independent reason to be posited.

4 A-Chains

We proposed in chapter 3 to put an index on a verb to indicate which is the subject NP. So far, we have regarded it as one of the tools which are necessary in Case assignment. But since this is the alternative way of expressing a grammatical relation, it must have an effect on other phenomena. Among them, what I am most interested in is its effect on movement operations.

We noted above that the moved element and its trace together make a chain and that every member of a chain is marked by the same index. It is further assumed that they share the common theta-role and Case.

What must be asked now is how to restrict the occurrence of chains. Chomsky (1986a) proposes that every member of a chain must govern another member which immediately follows it. In other words, there must be no barriers between any two adjacent members. Let us examine whether this proposal is appropriate to Indonesian and Tagalog. We will investigate the case of A-chains below, and the case of non-A-chains in chapter 5.

4.1 Percolation of Index

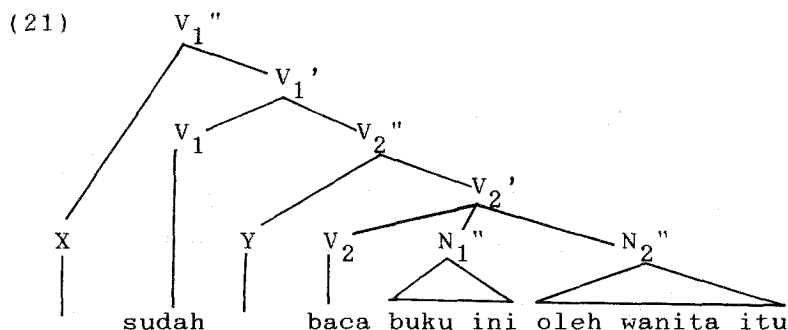
Consider the following sentence of Indonesian.

(20a) [Wanita itu [sudah [mem-baca [buku ini]]]].

woman the finish AV-read book this

'The woman has read this book.'

Since sudah is always followed by a VP, the D-structure of (20a) can be supposed as (21).



Note that (20b) is ungrammatical, while the position Y is also the specifier position.

(20b)*[_V"Sudah [_V"wanita itu [mem-baca [buku ini]]]].

finish woman the AV-read book this

'The woman has read this book.'

Two problems now arise. First, since N_2'' is in the position X in (20a), it is required that V_1 should assign nominative Case to N_2'' , but how can the index of V_1 be identical with that of N_2'' ? Second, how should we exclude (20b), where N_2'' is in the position Y?

Let us consider the first problem. We have stipulated above in (14) that every verb must be coindexed with one of its complements. Since V_2 carries the prefix meN-, it is obvious that V_2 is coindexed with N_2'' . The controversial point is the index of V_1 . It has only one complement and that is V_2'' . Given

our stipulation of verb-indexing (14), it is required that V_1 be coindexed with V_2'' . Now we can expect that if only V_2'' and V_2 are coindexed, N_2'' and V_1 will be correctly coindexed. We must somehow give the same index to V_2'' and V_2 .

Let us assume for this purpose that index may percolate. Percolation, which was originally proposed by Chomsky, commands that the property of the minimal projection will be copied to its projections. If we permit the index to percolate, the index of V_2 will be copied to V_2' and V_2'' . This brings about the desirable consequence that N_2'' in the position X is assigned a nominative Case, since the assigner and assignee are now coindexed.

Let us turn to the second problem. Why is N_2'' forbidden to be in the position Y? (20b) does not violate Case filter, because N_2'' is assigned nominative Case and N_1'' objective Case both by V_2 . Note, however, that there is one difference between (20a) and (20b); V_1 in (20b) does not assign any nominative Case. Due to the Minimality Condition proposed in Chomsky(1986b), V_1 cannot govern the position Y, since it is already governed by V_2 . Then the only candidate for a nominative Case assignee would be V_2'' , but it is clear that V'' cannot be Case-assigned. This analysis leads to the following filter:

- (22) A sentence is ungrammatical if it contains any V which fails to assign a nominative Case.

This filter helps us to predict the grammaticality of sentences above. (20b) is excluded by (22) but (20a) is not. For in (20a) V_1 assigns a nominative Case to N_2'' , and V_2 can assign it to the trace in position Y, provided that N_2'' is substituted to position Y before moving into position X.

This analysis informs us of two important consequences. One is that a Case can be assigned more than once to the same chain. And the other is that the multiple Case assignment is possible only when those Cases are all the same kind. For otherwise, it would be excluded by Case filter (16). This latter consequence can be expressed as follows.

- (23) Every governor of a member of A-chain has the same index.

4.2 Raising

We will analyse in this section so-called raising construction, for the purpose of presentation.

Indonesian often uses bahwa to mark the beginning of a embedded sentence. We can consider it to be the correspondence of that in English, though there is no distinction between finite form and infinitive form in Indonesian.

- (24) [Wanita itu_i [di-anggap [bahwa [_v"t_{1i} [sudah_i [t_{2i}
 woman the TV-believe that finish
 [mem-baca_i [buku ini] [t₃]_i]]]]]]].
 AV-read book this
 '*The woman is believed that has read this book.'

The English translation is ungrammatical because the trace t₁ which is in the position of subject of tensed-S is not properly governed and excluded by the Empty Category Principle. On the contrary, the Indonesian sentence (24) is grammatical, so something must properly govern the trace. The plausible candidate is sudah. We will proceed the analysis on the assumption that sudah is the proper governor of the trace.

We see that there are four NP's which carry the index i in

(24); wanita itu, t_1 , t_2 and t_3 . Let us see whether the condition (23) is satisfied or not. Baca is coindexed with t_3 and sudah also has that index by the percolation. But anggap is expected to have the different index, which might be the same with bahwa. Nevertheless, (24) is grammatical, so there is no possibility of causing the Case duplication. The only way out is to add the following specification to the Lexicon.

(25) Bahwa is coindexed with its complement V".

This specification may appear rather strange since the head succeeds the index from its complement. But it is likely when we think of its meaning, for what tells us the content of the embedded clause is not bahwa but the complement V".

Bahwa is sometimes deleted at PF component, but no problem arises.

(26a) [Soal itu_i [di-anggap $_i$ [$V''t_i$ [beres $_i$ [t_i]] $_i$] [oleh
problem the TV-believe settled by
Ali]]].

Ali

'The problem was considered by Ali to be settled.'

If the main verb anggap is coindexed with N" as in (26b), then the result would be ungrammatical, because the chain led by soal itu is assigned two distinctive Cases, nominative and objective.

(26b)*[Soal itu_i [meng-anggap $_j$ [t_i [beres $_i$ [t_i]] $_i$] [oleh
problem the AV-believe settled by
Ali] $_j$]].

Ali

5 Non-A-Chains

5.1 Government

My concern in this chapter is the effect that the alternative Case assignment rule proposed in chapter 3 has on non-A-movement. There are some non-A-movements in Indonesian. For example, a focus or a theme often appears in the leftmost position, and we can regard this as a movement to C"-specifier.

- (27) [_C"Surat itu_i, [_V"saya [me-nulis_j[-nya]_i]]].

letter the I AV-write -it

'That letter, I wrote it.'

- (28) [_C"Kuda itu_i, [_V"lari-nya_i [cepat]]].

horse the run -it fast

'That horse, its run is fast.'

- (29) [_C"Kepada Ani_i, [_V"Hasan_j [meng-irimkan_j [surat itu]

to Ani Hasan AV-send letter the

[t]_i]]].

'To Ani, Hasan sent the letter.'

We can see that members of this chain do not govern one after another: there stands the barrier V" between C"-specifier and the inside of V". This is the property of non-A-chain which differs from that of A-chain; A-chain stands on government, but non-A-chain does not.

It does not, however, go beyond the range of possible movement.

- (30a) [_V"Kamu [mengatakan [_C"kemarin_i-kah [_V"ayah-mu_j

you say yesterday father-you

[pergi_j [ke Tokyo] [t]_i]]]]]?

go to Tokyo

'Did you say that it was yesterday that your father went to Tokyo?'

(30a) is an Indonesian sentence in which the focus kemarin is moved to the embedded COMP position (-kah is a suffix which marks the focus in case of questions). If we move the focus further, the sentence becomes ungrammatical.

(30b)*[_C"Kemarin_i-kah [_V"kamu [meng-atakan [_C"[_V"ayah-mu_j
yesterday you AV-say father-you
[pergi_j [ke Tokyo] [t]_i]]]]]]?
go to Tokyo

The reason why (30b) is ungrammatical should be attributed to the fact that the focused N" moves over two barriers, i.e. two VP's which is not the complement of lexical category. This shows that non-A-movement does follow the bounding theory, while non-A-chain does not stand on government. Chomsky (1986a) argues that every chain must stand on government, but the above consideration reveals that this statement should be restricted only to A-chains.

5.2 Insertion of Proform

Note that (27) and (28) have a proform -nya inserted in the position which must be filled by a trace. They are both examples from Indonesian. In Tagalog, it is not permitted to use a proform in such a position. It does not have any counterparts of (27) or (28), but only of (29):

(31) [_C"Sa Lunes_i [_V"babalik_j [si Ric]_j [t]_i]].
SA Monday return ANG Ric
'Ric will be returning on Monday.'

When we compare (27) and (28) with (29), we notice that the Case of the trace is different; when a trace is assigned objective or genitive Case, a proform is inserted, and when a trace already has some inherent Case, the trace remains as itself (cf. 5.4).

In case that a proform is inserted, an interesting fact can be observed. Consider the following example, where yang is an element which introduces a relative clause.

- (32) [_C"Rumah ini_i, [_V"lelaki [_{yang} [_V"memperkenalkan [_{orang}
house this man AV-introduce person
[_{yang} [_V"mem-beli[-nya]_i]]]]] [_{baru} me-ningal]]].
AV-buy -it recently AV-die
'As for this house, the man who introduced the person
who bought it has recently died.'

Take note of the movement in (32): there stand as many as three barriers (=V") between the moved Topic and the trace left behind. Movements like this are sure to be excluded in English. So it amounts to the claim that this kind of chain should be quite different from ordinary ones. Probably, it is the existence of proform in the chain that determines whether the movement observes the bounding constraint or not.

5.3 Relative constructions

We discuss next the relative constructions to illustrate our analysis. In Indonesian, the word yang, which is supposed to be in a COMP, introduces a relative clause. Normally the position which carries the same index as the relative antecedent will be left empty, but sometimes it is filled by a proform -nya.

(33) [[Orang_i [yang []_i mem-baca buku itu]] [guru saya]].

person AV-read book the teacher I
'The person who is reading the book is my teacher.'

(34) [[Anak_i [yang buku[-nya]_i hilang] itu] adik saya].

child book -IT lost the brother I
'The boy whose book was lost is my brother.'

(35) [rumah ini_i, [yang [orang [yang mem-beli[-nya]_i]] itu]

house this person AV-buy -it the
akan datang besok]]
will come tomorrow
'?this house, that the person who bought it will come
tomorrow'

Since the condition which causes the occurrence of -nya seems to be the same, we can claim that the empty positions should be occupied by a trace. Then it is plausible that something has moved out of that position. Although the destination must be the C"-specifier position, that position is also empty. So it requires an analysis that some empty element has moved out to C"-specifier position.

Note that the following construction is not permitted:

(36) *[[yang [orang_i [mem-baca [buku itu] [t]_i]]]]

person AV-read book the
'the person who is reading the book'

This makes explicit that yang requires its specifier position to be somehow filled, even if it is not phonetically realized. We can exclude such sentences as (36) by adding the following specification to the Lexicon.

(37) The specifier position of yang clause must have

an index.

The difference between the two COMP's, bahwa and yang can be thus summarized: bahwa must carry the same index with its complement but has no limitation on its specifier, whereas yang has its own index and requires its specifier to carry an index.

5.4 A Hypothesis on the Antecedent of Trace and Case

We stated above that a proform must be inserted in place of a trace in some constructions in Indonesian. My concern in this section will be to propose a hypothesis to explain the reason why a proform must appear.

The inserted proform is found in movement of topic or focus to clause-initial position and in relative construction, but it is not found in the movement to the subject position. In other words, it is inserted only in the case of non-A-chain. Furthermore, it is limited to the case that the trace is assigned an objective or a genitive Case.

Remember that the Case which is assigned to a trace is copied to its antecedent if the latter is in non-A-position. The above facts are explained if we assume the following filter:

- (38) The antecedent of a trace must not be assigned an objective or a genitive Case.

If a moved N" should be copied an objective or a genitive Case from the trace, the sentence will be excluded by this filter. Each language conceives some devices to free itself from this filter; in Indonesian, it is to insert a proform on the trace after copying Case, thus converting its antecedent to the antecedent of a pronoun, not of a trace.

In Tagalog, we can also find a movement of topic or focus to the clause-initial position and a relative construction. The filter (38) is also applied to Tagalog, and we will see some other devices to free from the filter. The remarkable examples will be found in topic movement.

When the topic is moved to the clause-initial position, the particle ay appears as its marker. Since ay occupies the COMP position, the position to which the topic be substituted must be a specifier of COMP. Note also that the objective or a genitive Case are marked by a NG-case-marker in Tagalog.

If we move a NG case N" as a topic, the sentence will be ungrammatical, as expected by filter (38). But Tagalog has two devices to avoid this situation. First, consider (39). (39b) is a sentence in which the underlined part of (39a) is moved out as a topic.

(39a) [1000 yen [ang isa-ng kilo [ng karne]]].

1000 yen ANG one-LK kilogram NG meat

'One kilogram of meat costs 1000 yen.'

(39b) [Ang karne_i [ay [[1000 yen] [ang isa-ng kilo [t]_i]]].

ANG meat TP 1000 yen ANG one-LK kilogram

'The meat costs 1000 yen a kilogram.'

Note that karne is marked by a NG-case-marker in (39a), whereas it is marked by an ANG-case-marker in (39b). It would be reasonable to assume that this operation is one of the way to extract a NG-case-marked N". Following is a similar example.

(40a) [May [bahay [namin]] [sa Tokyo]].

exist house NG-we SA Tokyo

'Our house is in Tokyo.'

- (40b) [Kami_i [ay [may [bahay [t]_i] [sa Tokyo]]].
 ANG-we TP exist house SA Tokyo
 'We have a house in Tokyo.'

Now consider the following sentences:

- (41) [[Ang lapis [ni Maria]] [ay [ito [t]]]].
 ANG pencil NG Maria TP ANG-this
 'Maria's pencil is this.'
- (42) [[Sa ibabaw [ng mesa]] [ay [may [aklat] [t]]]].
 SA on NG table TP exist book
 'On the table is a book.'
- (43) [[Gusto [ng Nanay]] [ay [[t] [narito [siya]]]]].
 want NG Mother TP here ANG-he
 'What Mother wants is that he be here.'

Although it is usually the single element which may be topicalized, more than one element are fronted in the above examples. Moreover, the moved elements in (43) do not make any constituent. We must explain why these are so deviated.

I suggest that they represent another device not to violate the filter (38). They escape the filter by moving the element in question together with its governor. (41) and (42) represent the case that the governor is a noun, and (43) the case that it is a verb. All cases save the antecedent of the trace from being assigned a NG-case.

Of course, (38) is not an universal constraint. So we expect that other languages would have "counterexamples" for (38). But it is interesting to notice that English has a filter (44), which is similar to (38).

- (44) The antecedent of a trace must not be assigned a

Genitive Case.

This explains the Pied-Piping phenomena in Wh-Movement. When the moved Wh-phrase is a subject or an object, it will simply be moved out leaving a trace behind. But when it is whose or of which, which may be assigned a genitive Case, it cannot be moved out by itself, but with its governor.

(45a) [Whose father] is a doctor [t]?

(45b)*[Whose] is a doctor [t] father?

(46a) I could see a house [the roof of which] [t] is red.

(46b)*I could see a house [of which] the roof [t] is red.

As a consequence of these considerations, we assume there may be a following hierarchy with respect to the Case of antecedent of a trace.

(47) Nominative > Objective > Genitive

Each particular grammar would have a parameter to decide to which Case it permits for the antecedent of a trace.

6 Summary

Chomsky supposes that Case should be assigned to a position. This further implies that the grammatical relation is defined in terms of a configurational structure. But in many languages word order is not so rigid as in English. In case of those languages, it is not so easy for us to determine what grammatical relation an NP carries, if we refer only to positional informations. Some more devices must be figured out to make out the grammatical relationship. There are at least two ways of thinking. One is to postulate an abstract configurational structure, and the other

is to give up the idea of defining grammatical relations in terms of structure. The latter does not mean that the grammatical relation must be primitive, but that it must be defined by other terms.

In this paper, we took the latter possibility and proposed that Case should be assigned by referring whether its index is the same as that of the Case assigner or not. The main procedure is as follows. We supposed that a verb is coindexed with one of its complements at D-structure. Cases are assigned at S-structure depending on what index the N" has --- the one having the same index as the verb governing it is assigned a nominative Case, and the one having a different index from that verb is assigned an objective Case. The condition that the assigner should govern the assignee would be required in any language, but we claim that each language differs as to whether the condition of adjacency is required or not.

In chapter 4 and 5, we discussed the effect of this Case assignment on movement. Chomsky (1986a) argues that every member of a chain would have the common theta-role and the common Case, and that every chain stands on government. But by analysing the sentences in Indonesian and Tagalog, we showed that it is not adequate to all sorts of chains.

First, it is necessary to distinguish A-chains from non-A-chains. On the one hand, members of an A-chain must govern one another in sequence, and furthermore, it is required that every governor of its member should have the same index as that of the chain, since it is the only way not to cause Case duplication. On the other hand, members of a non-A-chain need not govern one another in sequence, though they should not be so distant as to violate the bounding constraint.

Second, in Indonesian, a proform is inserted instead of a trace when the antecedent of a trace should be assigned an objective Case or a genitive Case. When a proform is inserted, the movement no longer need to be restricted by the bounding constraint. So this may also be another kind of chain.

Now since we cannot find any instances where the antecedent of a trace is assigned objective or genitive Cases in Tagalog either, it seems that such a situation is always avoided. We pointed out the possibility that there may be some constraint about the Case of antecedent of a trace.

Throughout, we have mentioned several facts which may not be drawn out by analysing only English. It is indispensable for investigating the explanatory adequacy of GB theory to study various languages and to extract more general principles.

NOTES

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1 First we cite examples in Indonesian. The following is a full construction of N":

[_N"oleh [_N,wanita [indah] [itu]]]

by woman beautiful the

'by the beautiful woman'

The head noun is wanita, and the complements are indah and itu. The head and its complements constitute N', which, in turn, constitutes N" together with the specifier oleh.

The construction of V" is as follows:

[_V" [_N" Ahmad] [_V, memukul [_N" anjing itu]]].
 Ahmad beat dog the
 'Ahmad beat the dog.'

The head verb is memukul, which is made up of the stem pukul and the prefix meN-. The complement is the N" anjing itu, and the specifier is the N" Ahmad, which serves as the subject. We assume that a subject occupies the position of specifier of V" in Indonesian.

The structure of C" is exemplified in the following way.

- (a) [_N" bunga [_C" [_C, yang [_V" merah [EC]]]]]
 flower red
 'red flower'
- (b) [_C" [_C, bahwa [_V" Zaki pergi ke kantor post]]]
 fact Zaki go to office post
 'that Zaki went to the post office'

Both yang and bahwa are complementizers, which function as the head. The complement is the following V" and the preceding specifier position is empty in both (a) and (b). Because yang is used only in relative constructions, its distribution is complementary with bahwa. Therefore the following formulation is obtained: choose yang for COMP when there is an empty category within its complement, otherwise choose bahwa.

Now let us turn to Tagalog. We will begin by analyzing N"

as before:

[_N"ang [_N,babae [_N"ng Tagalog]]]
ANG woman NG Tagalog
'the Tagalog woman'

The head noun is babae, the complement is N" ng Tagalog and the specifier is the case-marker ang.

Next the structure of V" is shown.

[_V"Hindi [_V,bumalik [_N"si Jose] [_N"sa opisina]]].
not return ANG Jose SA office
'Jose did not return to the office.'

Bumalik is a head verb, and the complement is two N"s si Jose and sa opisina. In the case of Tagalog, the specifier position of V" is mainly occupied by negative words such as hindi. This position is sometimes occupied by an N", provided that there is no negative word.

- (a) [_V"Aking [_V,gagawin [_N"ito]]].
SA-I do ANG-this
'This will be done by me.'
- (b) *[_V"Hindi aking [_V,gagawin [_N"ito]]].
not SA-I do ANG-this
'This will not be done by me.'

2 Chomsky (1986a) claims that the genitive is an inherent case. It is because he assumes that the inherent case is closely related with its theta-role. But since the genitive case shares more properties with the objective case than with inherent cases in Indonesian and Tagalog, we regard it as structural Case here (cf. chapter 5).

3 Throughout, the following abbreviations are used in the morpheme-by-morpheme glosses:

ANG .. ANG-case-marker
AV ... agent (= active) voice marker
NG ... NG-case-marker
SA ... SA-case-marker
TP ... topic marker
TV ... theme (= passive) voice marker
LV ... locative voice marker

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